REMARKS

Claims 1-30, and 32-37 are pending. Claims 7, 8, 13, 14, 18-20, 27, 28, and 36 are withdrawn. Claims 1, 2, 3, 4, 9, and 10 are amended. The amendments find support in the specification and claims as originally filed, and do not introduce new matter.

Rejection of Claims 1-6, 9-12, 15-17, 21-26, 29-30, 32-35, and 37 Under 35 U.S.C. §112, Second Paragraph

The Office Action states that claims 1 and 2 are rejected for the recitation of "providing a population of transgenic insects comprising a human neurodegenerative disease gene," because the relation of the phrase to the rest of the claim is unclear. The Office Action states that "what element of the claim 'a human gene' limitation is intended to limit, e.g., an agent, a trait, an effect, specimens, a population, etc. is not clear." Applicants disagree and traverse the rejection.

The language of the claim is clear on its face. The human neurodegenerative disease gene limitation is intended to limit the claimed transgenic insect. That is, the claim clearly limits the recited transgenic insects to those that comprise a human neurodegenerative disease gene. There is no confusion as to what element of the claim is limited by the phrase "a human neurodegenerative disease gene."

The Office Action states that claims 1, 2, 9, 10, 15, 23, and 37 are rejected because the "relationship between the preamble and the steps is not clear because it is not clear whether the step of 'correlating'... is intended to result in 'determining'." Applicants disagree and traverse the rejection.

While Applicants believe that the instant claims are clear on their face, the claims have been nonetheless amended herein to expedite prosecution. The amended claims should be sufficient to overcome the rejection outlined in the Office Action.

The Office Action states that claims 1, 2, and 37 are rejected for reciting a method for "determining an effect of a test agent" because the relationship between the

method steps is ambiguous, as it is not clear whether a digital image is generated before or after the administration of the test agent. The claims have been amended to resolve this alleged ambiguity.

The Office Action states that claims 3 and 4 are rejected over the limitation "claim 1 [2] further comprises quantifying...trait." The Office Action states that it is not clear where the step fits within the parental claim. Applicants disagree and traverse the rejection.

Claims 3 and 4 have been amended to clarify that the additional step comprises quantifying a trait shown in the digital image, thus, the relationship of the quantification step to the parental claim is clear and unambiguous. The amended claim should be sufficient to overcome the rejection.

Claim 9 has been rejected over the recitation "generating an agent phenoprofile...and ranking said test agents according to the similarity or difference of each agent phenoprofile with a reference phenoprofile." The Office Action states that the step of ranking is unclear because a reference phenoprofile is not determined in other method steps and because the claims does not recite a step of comparing the agent and reference phenoprofile. Applicants disagree and traverse the rejection.

Claim 9 has been amended to add a step of comparing the agent phenoprofile with a reference phenoprofile. There is no need, however, for the claim to recite an active step of preparing a reference phenoprofile. The claim is sufficiently clear on its face as currently amended.

The purpose of the requirement for definiteness in §112, second paragraph is to ensure that the claims serve a notice function to the public such that the public is informed of the boundaries of what constitutes infringement of the claims. Claim 9 clearly requires the comparison of an agent phenoprofile to a reference phenoprofile. One of skill in the art would be appropriately appraised of the boundaries of the claimed invention, and would understand that infringement of the claim is not dependent on

whether the reference phenoprofile is generated *de novo*, or is obtained, for example, from the literature. Claim 9 is clear and unambiguous as presently presented.

The Office Action states that claims 9, 10, 15, and 23 are rejected for the recitation "generating/determining an agent phenoprofile." The Office Action states that because determining a phenoprofile encompasses the steps of creating a digital image and correlating a trait with an effect, it is unclear whether the step of generating a phenoprofile is intended to substitute for the steps recited in parental claims 1 and 2, or is one of generating a new/different phenoprofile. Applicants disagree and traverse the rejection.

Claims 9, 10, 15, and 23 recite the generation of an agent phenoprofile. The specification defines an agent phenoprofile as a description of one or more of the measured traits of a population treated with a specific test agent (p. 10). Thus, claims 1 and 2 require the generation of a digital image showing a trait, and dependent claims 9, 10, 15, and 23 further limit the claims by requiring the generation of an agent phenoprofile; a description of traits of the population treated with the test agent. There is no ambiguity as to whether the steps of claims 9, 10, 15, and 23 are replacing those of claims 1 and 2. The steps recited in claims 9, 10, 15, and 23 simply provide additional limitations that further narrow the scope of the invention recited in claims 1 and 2. As for whether the agent phenoprofile step of 9, 10, 15, and 23 is "one of generating a new/different phenoprofile," Applicants note that claims 1 and 2 do not require the generation of an agent phenoprofile. While claims 1 and 2 are written broadly enough to encompass the generation of an agent phenoprofile, no such express limitation is recited in the claims. Applicants are, thus, unclear on the Examiner's interpretation of the claim and to the extent that this rejection is maintained, request that the Examiner clarify the basis for the rejection.

The Office Action states that claims 10 and 15 are rejected over the recitation "more or less similar to the reference phenoprofile." The Office Action states that the metes and bounds of the claim are not clear. Applicants disagree and traverse the rejection.

It is well settled that the fact that claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite under 35 U.S.C. 112, second paragraph. Seattle Box Co., v. Industrial Crating & Packing, Inc., 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984). Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification.

Although claims 10 and 15 recite "more or less," the claims are not indefinite because, upon reading the claims in view of the specification, one of skill in the art would be appraised of the boundaries of what constitutes infringement of the claim.

The Office Action states that claim 37 is rejected over the recitation of "correlation" because is it not clear what is intended to be correlated. Applicants have amended claim 37 to remedy the alleged ambiguity and, therefore, the amended claim should be clear on its face.

In view of the foregoing, Applicants believe that each of the basis for rejection under §112, second paragraph should be overcome and request that the rejections be reconsidered and withdrawn.

Rejection of Claims 1-6, 9-12, 15-17, 21-26, 29-30, 32-35, and 37 Under 35 U.S.C. §102(e)

The Office Action states that claims 1-6, 9-12, 15-17, 21-26, 29-30, 32-35, and 37 are rejected under §102(e) as anticipated by Botas et al. (U.S. 2004/0177388). The Office Action states that Botas et al. teaches a method of screening for a compound having activity against neurodegenerative disorder in transgenic insects comprising providing a population of transgenic insects having a human neurodegenerative disease gene, administering an agent, creating a digital image showing a trait in the population, and correlating the trait with the effect. Applicants respectfully disagree and traverse the rejection.

It is well settled law that anticipation requires that the purported prior art reference disclose each and every limitation of the claim. *Atlas Powder Company et al. v. IRECO, Incorporated et al.*, 190 F.3d 1342, 1347 (Fed. Cir. 1999).

Botas et al. does not teach a method for determining whether a test has an effect on a population of flies comprising creating a digital image showing a trait of specimens in the population as required by claim 1 and 35. All other pending claims depend, directly or indirectly, from claim 1 and, thus, incorporate the limitation of creating a digital image showing a trait of specimens in the population. Accordingly, Botas et al does not teach each element of the claimed invention and, therefore, does not anticipate the claims. Applicants therefore request that the rejection be reconsidered and withdrawn.

Rejection of Claims 1-6, 9-12, 15-17, 21-26, 29-30, 32-35, and 37 Under 35 U.S.C. §103(a)

The Office Action states that claims 1-6, 9-12, 15-17, 21-26, 29-30, 32-35, and 37 are rejected under §103 as unpatentable over Bainton et al. in view of Hendricks and Chan. The Office Action states that the rejection is maintained from the prior Office Action. A review of the prior Office Action, however, shows that only claims 32 and 33 were rejected by the prior art combination. The current Office Action states that the rejection is maintained, but has not articulated a basis for rejecting all of claims 1-6, 9-12, 15-17, 21-26, 29-30, 32-35 and 37 over this prior art combination. Applicants previously responded that the combined teachings of Bainton et al. and Hendricks did not teach a human neurodegenerative disease gene. Applicants surmise that the Office Action is implying that the teaching of a human neurodegenerative disease gene is provided by Chan, thus, resulting in a rejection that encompasses claims 1-6, 9-12, 15-17, 21-26, 29-30, 32-35 and 37. Applicants request that the Examiner clarify the basis for the rejection. In the meantime, Applicants have addressed the rejection based on the assumption noted above, but reserve the right to amend their response in the event that the basis for the rejection is different from that assumed herein.

None of Bainton et al., Hendricks et al. or Chan provide the requisite motivation to make the combination suggested in the Office Action. Bainton et al. teaches a method for monitoring the behavior of Drosophila in response to psychostimulants (cocaine, nicotine, and ethanol). There is no teaching or even a suggestion in Bainton et al. to modify the described method of measuring behavioral responses to drugs of abuse to include a study of behavior and movement in Drosophila comprising a human neurodegenerative disease gene. Hendricks et al. merely teaches transgenic Drosophila that have mutations in the timeless or period genes, two genes involved in sleep and circadian rhythm and not even remotely associated with human neurodegenerative disease. The Chan reference is a review article that summarizes studies performed on various transgenic Drosophila. There is no teaching or suggestion in Chan to utilize transgenic Drosophila in concert with digital image analysis. The teachings of Chan are limited to genetic or molecular biological analysis of transgenic flies, and nowhere mentions monitoring behavior or movement. There is no motivation in Bainton et al. (focused on the effects of drugs of abuse) or Hendricks et al. (not remotely concerned with human neurodegenerative disease) to combine their teachings with each other, or with Chan.

In support of the rejection, the Office Action states that because Hendricks teaches that sleep is related to neural function, and Bainton teaches the implication of certain neurons in locomotion, that one of skill in the art would have been motivated to apply the genetic analysis of Chan to the locomoter assays of Bainton and transgenic flies of Hendricks to arrive at the claimed invention. Applicants disagree. The teachings of Bainton and Hendricks that relate, in part, to neural function do not provide requisite motivation to produce a transgenic insect comprising a human neurodegenerative disease gene, create a digital image, and determine traits from the digital image. There are countless functions ascribed to the human brain that would fall under the umbrella of "neural function." The disclosure in the prior art of two such functions (sleep and addiction) would in no way motivate one of skill in the art to make an arbitrary leap to a study of neurodegeneration. There is no teaching in either Hendricks or Bainton that would motivate one of skill in the art to seek the teachings of Chan to attempt to create a neurodegenerative model for studying traits shown in a

digital image. It is well settled that the showing of motivation must be clear and particular; broad conclusory statements about the teaching are not evidence of motivation. See, In re Dembiczak, 175 F.3d 994, 1000 (Fed. Cir. 1999). The Office Action has not provided more than conclusory statements based on insubstantial overlap in the art to support the rejection. The mere fact that the studies of Bainton and Hendricks involve neural function is insufficient to tie those references to the teachings of Chan to support a prima facie case of obviousness.

In addition, the teachings of Chan relate to genetic and molecular biological analysis of transgenic Drosophila. The scientific inquiry that forms the basis of the Chan teachings ("elucidate fundamental cellular pathways," "disease proteins," "genetic approaches to...elucidating ways to prevent or delay toxic effects of such disease proteins;" Abstract), is based on molecular analysis and analysis of Drosophila genetics (p. 1075, second column, first full paragraph). That is, the entire thrust of Chan is the molecular basis of neurodegeneration. Chan does not remotely suggest using digital image analysis to identify the effect of a test agent on a transgenic insect comprising a human neurodegenerative disease gene.

At best, the combination suggested by the Office Action would be obvious to try. The Federal Circuit has long held that "obvious to try" does not constitute "obviousness." The court in In re O'Farrell (853 F.2d 894, 7 U.S.P.Q.2d 1673 (Fed. Cir. 1988)) made an excellent distinction between these two concepts. Judge Rich noted that "[a]ny invention that would in fact have been obvious under §103 would also have been, in a sense, obvious to try. The question is: when is an invention that was obvious to try nevertheless nonobvious?" (Id. at pages 1680-81). He went on to state that

> The admonition that 'obvious to try' is not the standard under § 103 has been directed mainly at two kinds of error. In some cases, what would have been 'obvious to try' would have been to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful. [4 case cites omitted]. In others, what was 'obvious to try' was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art

gave only general guidance as to the particular form of the claimed
invention or how to achieve it.

(Id., at 1681). The prior art cited by the Office Action clearly falls into Judge Rich's

second category. The Office Action states merely that the motivation to combine the

references would have come from a desire to facilitate the study of disease. There is,

however, no teaching in any of the cited references that suggests making the proposed

combination to achieve the asserted purpose of facilitating the study of disease. While

it may prove to be a promising field of experimentation, the claimed method of

determining the effect of an agent on a transgenic Drosophila comprising a human

neurodegenerative disease gene by digital image analysis is not taught or suggested by

the prior art. The prior art gives no more than general guidance as to how one of skill in

the art would carry out the claimed invention, and thus, fails to supply the required

motivation to make the combination asserted by the Office Action. The suggested

motivation to combine Bainton et al., Hendricks et al., and Chan, namely, to facilitate

the study of disease in Drosophila is simply insufficient to support a finding of

obviousness under §103.

In addition, with respect to claim 23, the claim requires that the method examine

a phenoprofile for the population at a plurality of times during the life of the insect; that

is the claim encompasses the monitoring of the progressive nature of the effect of the

expression of a human disease gene in the fly. The measured phenoprofiles are

indicative of the traits as they change over time. Bainton et al. and Hendricks et al. do

not teach such measurements. Bainton et al. is limited to measuring acute responses

in a single trial. Hendricks et al. determines the resting state of a fly at a given time

point. Neither reference teaches measuring an agent phenoprofile at a plurality of time

during the life of the fly. Accordingly, even if combined with Chan, the references do

not teach each element of the claimed invention. Thus, claim 23 and its dependents

are not obvious in view of the cited references.

Applicants accordingly request that the rejection be reconsidered and withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Dated: July 3, 2007   Respectfully submitted,

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